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PREFACE

Spain is the world's principal producer of olives, both brine and oil types; and fluctuations in its crops of these fruits are important both to the United States consumer and to the United States edible-oil and brine-olive industries.

Short crops of oil olives in Spain, for instance, may mean an increase in the price of olive oil in the United States but, at the same time, a larger market abroad for our vegetable oils. Spain accounts on the average for nearly 40 percent of world production of olive oil. Thus, oil olives are particularly significant to its economy: olives provide virtually all the edible oil consumed by the population; and exports of olive oil, especially to the United States, are an important source of foreign exchange.

Short crops of brine olives would affect shipments of pickled olives to the United States, for most of Spain's exports come to the United States: in the past three years, out of average annual exports of nearly 14,000,000 gallons a year, something over 11,000,000 gallons were for the United States market.

This survey was made by the Department of Agriculture with the cooperation of the Department of State. Both Mr. Burke and Mr. Stugard, though not specialists in olive culture, are experienced and competent observers of agricultural production. For kind assistance they received in making the survey they thank Harry R. Zerbel of the American Consulate in Barcelona; Robert E. Wilson, American Consul in Sevilla; and Luís de Soto Ybarra of Sevilla.

PROSPECTS FOR OLIVE CROPS IN SPAIN SINCE THE SNOWS AND FREEZE OF FEBRUARY 1954

In February 1954 heavy snowfall and a severe freeze in Spain did serious damage in several of the country's principal olive-growing areas, affecting both the brine and oil types of olive. During the first three weeks in April we visited these areas to observe the extent of the damage and to measure, as far as it was possible to do so, its effect on this year's crop and the crops of the next few years. Even while we were making our trip, heavy snow fell again in some areas.

Brine Olives

Sevilla is the most important brine-olive area in Spain. In fact, according to growers, the area of Spain's queen olive production is roughly that which can be seen from the tower of the cathedral in Sevilla.

Trees in this area are all grafted on wild olive root and trunks. The trees are grafted rather high on the trunk, often 6 or 7 feet from the ground. Interesting propagation methods are followed. Some trees are started by planting slips of wild olive, to which the queen olive is later grafted. Another method is to take a large limb of wild olive, as much as 4 or 5 inches in diameter and 10 feet in length, and to plant it in the spring to a depth of about 3 feet, immediately grafting the queen olive to the top of it. In order to protect the new planting and preserve moisture, a cone of earth is built up around the limb to a height of as much as 5 feet. When the grafts are inserted, they are waxed and wrapped with sparta grass cord and the entire area is covered with clay, leaving only the new graft exposed.

The trees are heavily pruned in a manner to keep the large limbs parallel to the ground. As a result they are low and spreading; few are more than 10 feet in height. One grower remarked that this kind of pruning is done by the same workers who do the picking, who want to keep the producing limbs within easy reach. The pruning practice exposes large areas of the limbs to the weather and causes much of the wood on the top of the branches to die and rot.

The groves are plowed with tractors and teams and seem to receive good care.

Weather Damage

In the first week of February this year, the area of queen olive production was subjected to a heavy snowfall. The weight of the snow on the heavily pruned and sometimes half-rotted limbs resulted in considerable breakage. In some sections as much as 20 percent of the bearing surface of the orchards has been lost. In the area as a whole, as growers estimated

and observations confirmed, about 10 percent of the bearing surface has been lost. Limbs usually broke next to the bud union, and the point of breakage has been grafted. Growers estimate that it will require 10 years to replace the destroyed bearing surface.

Production Prospects

It is characteristic of olives to bear alternately heavy and light crops. As 1953 was a year of heavy production, 1954 should be a light crop year; but moisture is adequate and the 1954 queen olive production may be expected to equal or exceed the 1953 crop. However, the weather damage should be evaluated as affecting the entire production for the next 10 years and for this longer period normal production may be reduced by about 10 percent.

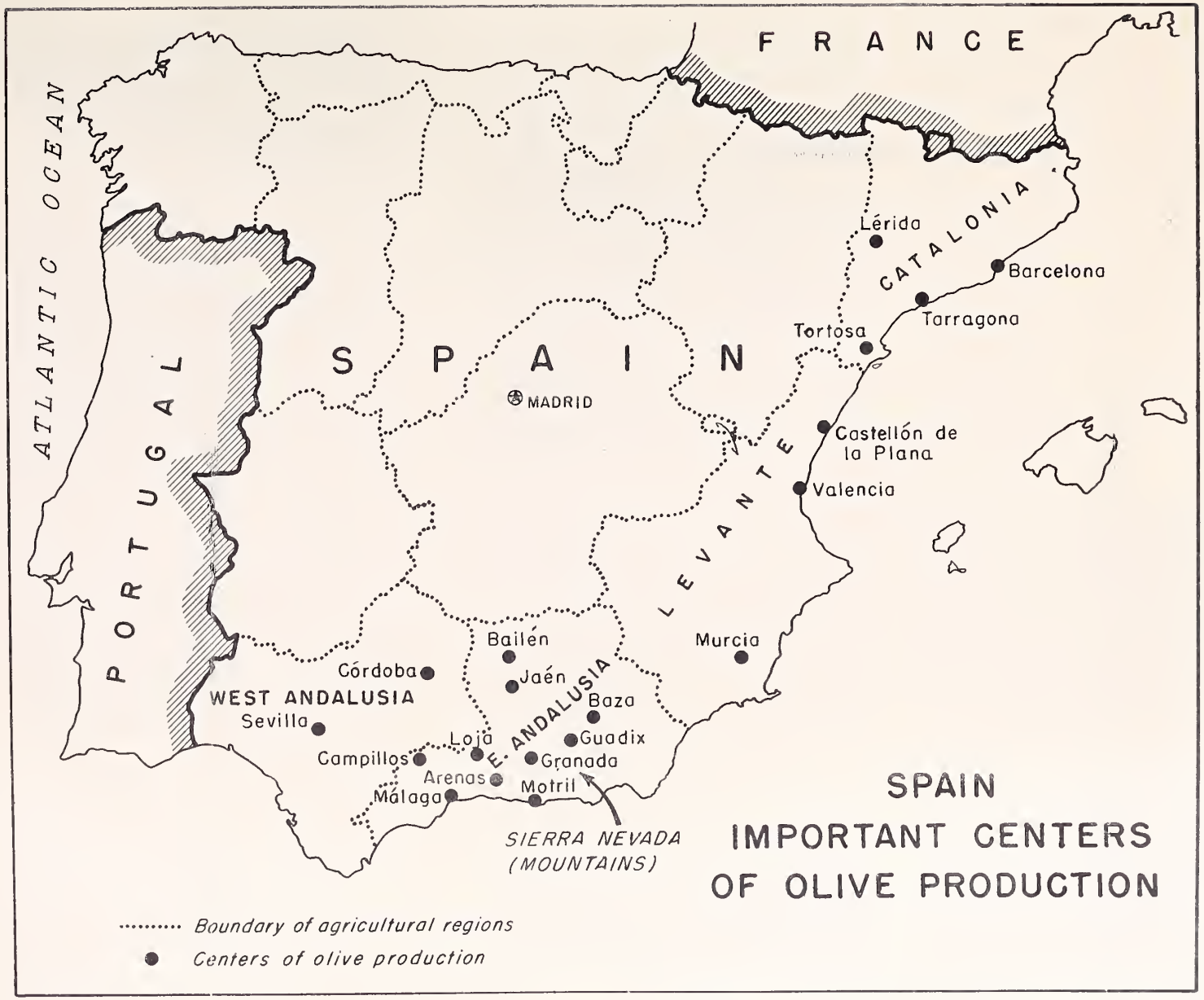
For 1953 the production of brine olives in Spain is estimated at about 80,000 hogsheads (440 kilograms each). Of this amount, about 60,000 hogsheads are estimated to have been in a good sanitary condition for export. It is further estimated by trade sources that 44,000 hogsheads had been either exported or contracted for by March 1954. In view of this circumstance, it may be expected that available stocks of export brine olives, both queens and manzanillas, will be exhausted before the 1954 harvest is available.

In evaluating the effect of the heavy snowfall on future brine olive production, it is to be considered that production in the last 4 years averaged 90,000 hogsheads. But these were favorable crop years, with higher production than normal in Spain; and it is probably more accurate to consider the average for the 10 crop years 1940-49 as more representative of normal production. Over this longer period the average total production of export type table olives, queens and manzanillas, was only 63,000 hogsheads.

Since the bearing surface has been reduced by about 10 percent, the total Spanish production of table olives may average between 55,000 and 67,000 hogsheads per year for the next 10 years. However, if weather conditions continue as favorable as in the last 4 years, then the production in the next few years may be expected to average about 80,000 hogsheads per year.

Oil Olives

The oil olive plantings that were visited are the largest concentrations of olive culture in Spain. They lie along the Mediterranean coast, extending inland for some distance, from Málaga through Murcia, Valencia, Castellon de la Plana, and Terragona to Barcelona and Lerida. Some had escaped the adverse weather entirely; others had been badly hurt. Among the latter, unfortunately, is Spain's largest oil-olive-producing area, in the vicinity of Granada and Jaen.



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This heavy snow in the extensive oil-olive-producing area near Jaén fell on April 7, when the trees were putting out new growth, and will probably reduce production for years to come.

Dry curled leaves of an oil olive near Granada, killed by the freeze.

Limbs of a queen olive tree near Sevilla broken by snow.

Limb of queen olive, broken at the bud union, is mended with new graft.

Cone of earth encloses a wild olive on which is grafted a queen olive.

Weather Damage

Sevilla, Malaga, and Motril.--Oil olive groves seen between Sevilla and the coast showed no signs of being damaged by frost and may be expected to produce a normal crop in 1954. Likewise the trees observed in the coastal area between Málaga and Motril were undamaged and will produce a normal crop.

Granada.--Granada, an important area of oil olive production, is different from other areas in that most of the valley plantings are irrigated and produce consistently heavy crops. The groves are cultivated by tractors and teams and probably receive the best care of any olive groves in Spain.

During the second week in April this area was surveyed from Granada westward, beyond Loja toward Sevilla and beyond Campillos to Arenas; and from Granada northward, 50 miles toward Jaén. Granada is situated in a valley under the high Sierra Nevada Mountains and its climate is entirely different from that of Málaga and Motril, which enjoy the tempering influence of a coastal climate. The area of Granada was subjected to unprecedented low temperatures in February: temperatures were estimated to have fallen as low as -14°C. to -15°C. (7°F. to 5°F.). Such low temperatures were confirmed by the condition of the eucalyptus trees, which seemed to be dead throughout the area; no green leaves were showing and in many cases the trunks of the trees were gumming. In some parts of the district, the native brush along the banks of streams showed signs of having been severely damaged.

Because of Granada's location, in the interior, it was affected by the frost in a way exactly opposite to that experienced in the coastal areas. Along the coast, damage was slightest at the low altitudes and greatest at the high; but in the vicinity of Granada and in the other interior olive-producing areas surrounding it to the north and west, the reverse was true.

Since the most productive olive plantings in the Granada region are on the irrigated valley floor, these received the greatest damage. In an area extending 20 miles south of Granada, 10 miles north, and 35 miles west, trees were uniformly damaged to a maximum degree, with all leaves dead. Apparently the trees themselves were dead, for little defoliation was taking place. Growers were removing some of these trees and cutting off the heads of others. Much of the road traffic was engaged in transporting either olive branches or olive wood.

The valley groves are surrounded by plantings at slightly higher elevations on sloping mountains; these evidenced a less severe degree of damage. The trees were "off color," rather dormant, and still defoliating. It seems unlikely that these weakened trees will produce any significant crop in 1954. The area of this lighter damage is extensive, covering practically the entire major oil-olive-producing area of Spain, from Granada west to within 30 miles of Sevilla, and northward through Jaén and Bailén to Córdoba. In the vicinity of Bailén further evidence of the broad expanse of the cold wave is seen in the eucalyptus trees, which were either killed or severely damaged.

Until tree recovery can be observed, it is not possible to fully evaluate the damage the olive trees in the Granada area have sustained. However, it is certain that a major part of the 1954 production has been lost; olive oil production from this most important area may not be more than half as much as in 1953. And for the next 30 years--the time that growers estimate is required to replace a full-bearing tree--production may be seriously affected.

It was observed that several new plantings of olives had been made in this area. Many of these had been severely damaged and some may have been killed; the frost has dealt a severe blow to acreage expansion plans. To make matters worse, the day after these observations were made, on April 7, the high areas of Jaen were again subjected to heavy snows. This additional snow may have damaged some growth just started in that area.

Moisture conditions throughout this entire region were excellent.

Granada to Guadix.--On April 8, the day after more snow had fallen, frost-damaged olive trees were observed on the high interior plateau between Granada and Guadix. Over a widespread area the snow had weighted down branches at the very time when spring growth was starting and may have reduced even further the crop prospects. The ground was still covered with 4 to 6 inches of snow.

Baza to Valencia.--In the coastal area between Baza and Valencia, olive trees were observed in scattered plantings, most of them poorly tilled. All of these plantings, which are relatively unimportant, were observed to be in good condition and undamaged by frost.

Valencia to Tortosa.--From Valencia to Tortosa there are scattered plantings of olive trees all along the coastal plain and extending a considerable distance inland. The trees observed were in a normal condition, and the moisture apparently available indicated that there would be normal production in 1954.

Tortosa to Tarragona.--Extensive olive plantings cover the hills of the coastal plain between Tortosa and Tarragona. There was no evidence of frost damage; but, unlike most of the olive areas in Spain, this area--when observed on April 19--seemed to be suffering from a drought. The grass was stunted and the olive trees had an extremely light population of leaves. Considering this condition, a normal crop in this area in 1954 seems unlikely.

Barcelona to Lerida.--An extensive olive district lies between Barcelona and Lérida, extending westward from Lérida for about 25 miles. Here most of the olives are grown on poor soil, on rolling ground at elevations from 1,000 to 2,000 feet; trees appear to be smaller than those in most of the other Spanish olive areas.

In this area there are conflicting factors that may influence the 1954 olive crop. First, this area generally has had adequate moisture to produce a normal crop. However, trees in extensive areas had been damaged by the February frost; when they were observed, on April 20, some of the leaves on many trees were turning brown and falling. It was reported that in part of this region temperatures had been as low as -11°C. and -12°C. (12°F. to 10°F.). At this time it is not possible to determine what crop can be expected from this area in 1954, but it is doubtful if trees so injured by frost can produce a normal crop even if adequate moisture is available.

Prospects for Olive Oil Production

In order to evaluate the effect of the cold weather of February 1954 on the Spanish olive oil production, past records of production must be examined. Data on production since 1939 (Table 1) show that the Spanish olive oil production is exceedingly variable, ranging from only 171,000 metric tons in the 1950-51 season to as much as 700,000 tons in 1951-52. Because of this erratic production record, it is extremely difficult to evaluate, in terms of expected tonnage, the effect of the frost and snow on the important olive-oil-producing area near Granada and Jaén.

Table 1.--Spain: Production and exports of olive oil, average 1939-40 to 1948-49 and 1950-51 to 1953-54, annual 1950-51 to 1953-54

(In thousands of metric tons)

Crop Year	Production	Exports 1/
Average:		
1939-40 to 1948-49	307	2/
Annual:		
1950-51	171	35
1951-52	700	21
1952-53	270	17
1953-54	300	23
Average, 1950-51 to 1953-54	360	24

1/ Exports are for calendar years, 1950-53.
2/ Not available.

Source: Official reports and estimates by the American Embassy, Madrid.

In the 10-year period from 1939-40 through 1948-49 the average production of olive oil was 307,000 metric tons. If the loss sustained this year in the damaged areas had been deducted from this average, it would probably have been at least 50,000 metric tons less, or about 250,000 metric tons. In projecting this loss into the future instead of into the past, about the only thing that can be said is that it may reduce the total production by about one-sixth of what it would otherwise have been under similar circumstances.

What the crop will be in 1954 is exceedingly difficult to estimate in April. In this season most of the olive-producing areas have had abundant moisture, a fact that under normal circumstances would indicate a year of high production. Counterbalancing this advantage is the frost damage in Granada and Jaén, which indicates a great reduction in crop prospects in that area. Even if olive oil production is higher than normal in the scattered less important areas, the Granada-Jaén crop may well be the smallest in the past 30 years.

Spain's average annual consumption of olive oil is estimated at 325,000 to 350,000 metric tons. Exports during the past 4 years have averaged 24,000 metric tons (Table 1), indicating an annual disappearance of about 350,000 to 375,000 tons. This is about in line with the average production of the past 4 years. During 1939-48, when production averaged 307,000 metric tons, Spain found it necessary to ration olive oil. Accordingly, the reduced rate of production which is indicated for the next 10 years will probably result in a tight supply situation, which Spain may meet by reducing consumption or by importing edible oils.